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saying that one is to look to these characteristics for its proof. For pragmatism as a radical doctrine truth is held to *consist* in an experience of satisfaction, such as 'All's well, now I can act.' For realism truth consists in an experience of identification, such as 'Here is a or $M + a$.' These two theories strictly held and strictly interpreted are not compatible. The pragmatist insists that true knowledge is a function of the process of knowledge. The critic of pragmatism insists, firstly, that true knowledge is also a function of the thing known; secondly, that in this latter functional relation is to be found the element of truth. Truth, because it is a part of the cognitive interest, must satisfy; but because it is *truth* it must envisage reality.

In this criticism I have not resorted to a general and vague insistence that true knowledge must 'correspond' to its object. I agree with the pragmatist that this is to take refuge in confusion. At the same time I would insist upon emphasizing the object as the element which plays the determining part in the constitution of truth. Experience seems to me to reveal the identity of true knowledge and its object. The object with what is true of it, and knowledge when true for the thinker, are one and the same thing. But this thing may be regarded in two ways because it belongs to two different series. If the object is approached along the cognitive series, then its uniqueness, its distinction in that series, is due not to its place in that series, but to its belonging to another series. The term *true knowledge* in the cognitive series is marked by its being the term in which this series intersects the series of reality. If the pragmatist is willing to accept this conclusion, then the issue is greatly clarified: but he can not, I believe, do so without largely abandoning those generalizations and philosophical corollaries of which he makes so much.

RALPH BARTON PERRY.

HARVARD UNIVERSITY.

DISCUSSION

CONTEMPORARY REALISM AND THE PROBLEMS OF PERCEPTION

IN the issue of this JOURNAL for May 9, Professor B. H. Bode has criticized the contemporary or monistic forms of realistic doctrine on the ground that they show a disposition to evade certain classic difficulties in the theory of perception, difficulties which have in the past invariably led those who faced them away from the naïve realism of common sense into the dualistic or inferential realism of popular philosophy, and thence on, by an inevitable dialectic, either to agnosticism or to subjective idealism. Professor Bode's criticism seems to me just. Before a new doctrine can be established it is usually necessary to make a place for it by attacking its rivals, especially if the latter are firmly entrenched in popular favor. The proponents of the new realism have consequently expended most of their energies hitherto in an attempt to arouse idealism from its dogmatic slumber by exposing the fallacies incidental alike to its Berkeleian and its Kantian forms; and aside from this more or less ungracious work of refutation there has been time only for brief and somewhat schematic formulations of the new theory in its positive or constructive aspects. Professor Bode's recognition of the existence of monistic realism[1] and his reminder of the peculiar difficulties with which it is confronted, would seem to offer a suitable opportunity for essaying what is always the second and more interesting step in the development of a doctrine—namely, the testing of it pragmatically by an application of it to specific problems.

Professor Bode first asks the realist to state 'what conception we are to form of those objects which are commonly regarded as subjective.' "However much we may insist upon the proposed extension of the term object, it must be conceded that objects fall into two classes, those of which the conditions coincide with the conditions of consciousness and those which exist whether there is an awareness of them or not. To the former belong objects such as emotions, reminiscences and volitions. There is a sense, however, in which this coincidence of conditions must undeniably be regarded by realism as a mere accident. Or, to put it differently, just as it is possible for realism to conceive a world of material objects in which the conditions for consciousness have somehow failed to become realized, so it must likewise be possible to conceive a world which includes emotions and volitions, but without awareness. Such objects, I submit, are meaningless."[2]

As this criticism appears to be based on a slight misunderstanding of the theory criticized, it will not be out of place to state once more the distinction between dualistic and monistic realism. Every realistic theory holds it to be true that some objects do not depend for their existence upon the fact that they are known. Knowledge or consciousness is regarded as a relation which these objects may or may not sustain to one another. But dualistic or Cartesian realism restricts this relational conception to objects that are known indirectly or merely inferred. Directly perceived objects are thought of as 'mere ideas' existing *only* in the mind, and constituting an entirely different order of existence from that of real objects. The adjective 'dualistic' applies to this Cartesian and Lockean doctrine, for the world is made to consist of two types of beings—the natural system of bodies and events in space, on the one side, and, on the other, a spaceless and therefore extra-natural realm of minds and their ideas: while to *knowledge* is left the necessarily mystical and ungrateful task of joining together what a dualistic nature has so effectually put asunder. The way in which the idealist meets this situation is well known. He simply cuts out the self-subsistent natural world of material bodies in space and leaves only the supernatural or spaceless realm of minds and their ideas or states. The world of reality thus becomes restricted to the world of *experience*. Systems of planets and systems of electrons, with the severely beautiful laws that govern their evolution, are given over to the scientist with the proviso that they are to be treated as mere artifacts, constructs or abstractions from human experience.

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[1] By monistic realism I do not, of course, mean any doctrine that would conflict with metaphysical pluralism, but only that epistemological monism which opposes the dualistic or representative theory of knowledge according to which objects and the ideas by which they are known are regarded as two incommensurable orders of facts.

[2] 'Realism and Objectivity,' this JOURNAL, Vol. IV., p. 260.

The monistic realist deals with the *impasse* of dualistic realism in a fashion that is equally revolutionary and more genuinely 'Copernican.' Instead of leaving out the Cartesian world of natural objects, he retains that world and leaves out the super-spatial and super-natural system of 'minds' and 'ideas.' He extends the relational theory of cognition to all objects—to those that are directly perceived in sense perception no less than to those that are merely inferred as the transcendent causes of perception. He is monistic in his epistemology because he believes in only one system of realities, the realities in space and time; he is realistic because he believes that no object forfeits its objective or self-subsistent character by chancing to stand in the consciousness relation. So far the contemporary realists are, I believe, in agreement. All contents of consciousness or experienced qualities are objects of the same order of reality, each one a constituent member of one and the same spatio-temporal system of nature. Consciousness itself is a relation between these objects. But now arises the question as to the *kind* of relation that consciousness is. A monistic realist, as such, is only committed to defining consciousness as a relation between natural objects, but not necessarily as itself an objective or natural relation of the same order of reality as the objects which it relates. Whether, for example, Mr. G. E. Moore would be willing to treat 'diaphanousness,' or whether Professor Woodbridge would be willing to treat 'implicativeness' (which are the characteristics that these two realists seem respectively to regard as most distinctive of the consciousness relation), as in themselves objective natural facts, I do not know. I ventured to christen my own brand of monistic realism 'panobjectivism,' to express the belief that not only all contents were objective, but also that consciousness or subjectivity itself was an objective fact, *i. e.*, a relation existing in a material nature along with other relations and, like them, describable ultimately in terms of the basic relations of space and time.

To return, then, from this explanatory digression to the point of Professor Bode's criticism. I find no difficulty from the standpoint of panobjectivism in admitting to the critic that there are certain facts such as decisions, emotions and feelings that are incapable of existing apart from consciousness or awareness. But note that if consciousness is itself a purely objective and natural relation the dependence of other facts upon it will not confer upon these latter any peculiar status, nor make them any less objective than if they lacked this dependence. The weight of a body depends upon the relation of that body to some other body, yet, notwithstanding such dependence, weight is as objective as inertia or figure and altogether on the same level as these seemingly more intrinsic qualities. I dare say there is no object the existence of which does not depend upon the relation subsisting between some other objects. Indeed, the goal of science seems to be nothing more than the correlation of every phenomenon with those relations between other phenomena upon which its appearance depends.

Professor Bode, in his second criticism, asks whether or not the new realism would regard the quality cognized in sense perception as numerically identical with the quality pertaining to the physical object. "If the distinction [between the immediately perceived object and the physical fact inferred to be its cause] is denied, the conception of objectivity becomes meaningless; while if it is affirmed we are forced back, after all, into the subjectivism from which it is the function of panobjectivistic realism to provide deliverance. . . . If there is numerical identity between the quality of the object and the quality perceived, we are obliged to say that the object possesses simultaneously all the qualities revealed in the different perceptions. Or, more specifically, we must be prepared to assert that an object may be both red and gray, both moving and stationary, both square and oblong . . . an object that possesses this incomprehensible fullness of character whereby it is enabled to be all things to all men is merely a name for the fact that experience takes place. . . . When error ceases to be possible the object loses forthright its title to existence. If, however, we resort to the second alternative and affirm a numerical distinctness between the quality perceived and the quality possessed by the physical object, the case is not much mended. We have now two orders of reality instead of one. . . . And it seems obvious that the question of the relation between these two different orders introduces anew, and in substantially the same form, the whole problem of dualism or subjectivism upon which the earlier realisms were wrecked.''[3]

Professor Bode has here stated, and, as it seems to me, in an unusually clear fashion, the most difficult problem in the whole theory of knowledge. Monistic realism certainly has not solved it. It is equally certain, though not mentioned by the critic, that no other epistemological theory has solved it. I venture to think that a profoundly important step toward its solution has been taken by the new realists in their unanimous recognition of the truth that perceived object and real object are at least the same kind of facts, and belong together in one and the same spatio-temporal order of material nature. Whether they are numerically identical, whether merely similar in quality, or whether they are neither similar in quality nor identical in substance, are questions which might be answered differently by the different members of the group. In the hope that other realists will be tempted to formulate more adequate solutions of this all-important problem, I will indicate briefly and tentatively what seem to me to be the lines along which an answer to Professor Bode's criticism should be sought.

I will begin by stating three propositions, which must for the purposes of this article be regarded simply as postulates, no attempt being made to prove them. They relate to the perceptual process, which from the genetic point of view consists of three stages: (1) the emission of an influence from a physical object in space; (2) the reception of that influence in the form of a stimulus by a living organism and its consequent transformation into a sensation; (3) the transformation of the sense datum into a perceived object located in the space outside the organism in a point sometimes the same as, but at other times different from, the point from which the stimulus proceeded. The three postulates severally refer to these three stages: from physical object to stimulus, from stimulus to sensation, from sensation to perceived object. Professor Bode's question concerning the numerical identity or difference of the *terminus a quo* and the *terminus ad quem* of perception can only be answered on the basis of a conception of the nature of the intervening links of the process.

First postulate—*concerning the nature of the physical object and the stimulus emitted by it.* Every physical object consists not of an indestructible substance, but of the energies flowing from all parts of space into the space occupied by it. It is a focus of energies. Each form of energy or *kinesis* is capable of being symbolized as a simple function of ds/dt, and with each of these forms of kinesis there is correlated a form of *stasis* or *quality* capable, perhaps, of being symbolized as a simple function of dt/ds, the reciprocal of the function symbolizing the energy. This would express the truth that wherever there is change there must be some thing or quality that undergoes the change—a mode of the static for every mode of the kinetic. An object is, then, not only a group of inflowing energies superposed upon one and the same part of space, it is also a system of the qualities correlated with those energies as their reciprocals. Now a material object as thus constituted is, of course, a center of outflowing no less than inflowing energies. Some of the energies that are radiated in all directions from it impinge upon the termini of the nervous systems of animals, and are then called sensory stimuli. *Each stimulus as a mode of energy has correlated with it a specific* QUALE. The quantity and quality of the stimulus express the nature of the object which is its source except for such modifications as may have been imposed by the medium traversed.

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[3] *Loc. cit.*, pp. 261–2.

Second postulate—*concerning the nature of the physiological stimulus and the sensation into which it is transformed.* The chief source of the apparent hopelessness of the stimulus-sensation problem is due to the assumption that specific qualities occur exclusively in the realm of consciousness, and that the 'real' world contains only primary qualities, which means, when consistently carried out, that it is a nexus of quantitative relations without terms. The psychophysical problem is made to appear as the problem of determining how energy in the form of a nerve current lacking specific quality can pass into a sensation which is conceived as being nothing but quality, as lacking physical energy and as existing nowhere in space. According to our first postulate the stimulus emitted from an object has correlated with it a specific quality, and the passing of stimulus into sensation now appears as the production of the qualified energy of a sensation from the no less qualified energy of a nerve current. We shall assume as our second postulate that when an externally observable current of kinetic energy in an afferent nerve fiber passes or seems to pass into a sensation, that what really happens is the transformation of kinetic energy of motion into an equivalent potential energy of stress at the point in which the kinetic energy is redirected, *viz.*, the move center.[4] However fantastic their identification may at first sight appear, it is worth noting that sensations and stresses resemble each other in two very significant points: (1) They are both conditions into which, at its points of obstruction or redirection, kinetic energy passes and from which it comes; (2) they are both essentially inaccessible, *i. e.*, 'potential' rather than 'actual' to any conceivable external observer, and possess that peculiar privacy and invisibility which is recognized as the distinctive attribute of mental processes and regarded as the chief justification for treating them as having no locus in space. *Whenever the potential energy at a nerve center is greater than the inflowing kinetic energy which is its cause, then there exists a consciousness of the quality of that energy.* In a paper entitled 'A Theory of Time Perception'[5] I expressed the same conception from the point of view of the time problem, pointing out that when the traces of past action of a stimulus exceed in intensity the present inflow, the phenomenon of a specious present, or duration-phase of existence, was made possible. It is only in consciousness that several successive moments of time can be present together in one moment; and the conditions for the occurrence of a duration or specious present and the conditions for the occurrence of consciousness are identical.

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[4] *Cf.* Karl Pearson's 'Grammar of Science,' note, p. 42.

Third postulate—*concerning the relation of the sense datum to the perceived object into which it is transformed.* In that simple type of consciousness called sensation, the quality of which we are conscious has for its apperception-mass only its own past states, and there is a consequent absence of the subject-object polarity so characteristic of the more advanced types of cognition. The quality felt and the feeling of it are inseparably blended. In the perceptual field of objects to which sensations give rise, the case is quite different. Each sense datum as soon as it occurs, is surrounded by a 'fringe' composed partly of the traces of sense data associated with it in the past and partly of the other sense data coexisting with it. All of these centers of stress form an interconnected system each member of which inhibits or intensifies or in some way modifies all the others. In such a system there would naturally exist at each moment some one point at which the stress resulting from the intersecting energies which are proceeding from the various sensory centers was greater than any one of these energies. Such a point would constitute the ego-center of the perceptual field, with regard to which the surrounding sensation-centers are organized into a system of mutually compatible *objects.* The prominence or vividness of the various objects would no longer depend upon their intrinsic sensory intensity, but upon the extent to which energy was fed back to them (in the form of what we call 'attention') from the ego-center in excess of the energy which they contributed to it. From this it would follow that one content could normally gain in vividness (*i. e.*, in the extent to which it was attended to) only at the expense of a corresponding loss to the contents at the opposite 'side.' And in order that the 'back stress' or outflowing energy of attention should be in excess of the inflow from the various sensation centers, it would be necessary for some of the sensory feeders of a perceptual psychosis to be unconscious, *i. e.*, to contribute to the energy of attention more than they received from it. Such a system of psychical objects would differ profoundly from a mere group of sensations. Contents having the same local signs or other relational similarities would be grouped together into clusters, and the qualitative components of each cluster, instead of having the independent substantive character belonging to them in the sensation phase, would now manifest an adjectival character and appear as attributes inhering in the cluster as in a substance or thing. And as with the elements of each cluster, so with the various clusters, each object would appear as inhering in or as presupposing the system of objects as a whole. The relational scheme of the system would be felt as prior to its particular members precisely as space and time are felt to be prior to the things and events that occupy them.

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[5] *American Journal of Psychology,* January, 1904.

To sum up this account of the psychophysical process: We have held (1) that physical objects are centers of inflowing and outflowing energies and that they also consist of the qualities correlated with these energies; (2) that some of the energies emitted from objects do after more or less modification impinge upon the sense organs of animals, and that, after undergoing a further modification of their nature consequent upon passing from the merely physical medium of air or ether into the physiological medium of the nerve fiber, these energies, when they reach the higher centers in the nervous system, undergo a redirection during which they must pass from the kinetic into the potential phase of being, this 'potential' or invisible phase of energy being regarded by us as identical with sensation; (3) that these sensations when connected in one system induce a center of stress or ego from which their several energy currents are reprojected as a field of perceptual objects back and out into the same real space and time in which their physical causes are located. The whole process can be put in a clear though not necessarily a convincing light by imagining a vast system of dynamos (the physical objects) whose energies are given off in the form of electric currents (the stimuli). A fraction of the energy of these currents is converted by means of an interconnected system of electromagnets (the brain cells) into centers of magnetic stress (the sensations), which centers of stress are reflected out from a common center as lines of force (perceived objects). Or, more simply, though less exactly, we might compare the relation of stimulus and perceived object to the relation of a ray of light incident upon a mirror and the same ray reflected from the mirror. The idea being that the nervous system serves as a mechanism for correlating and reflecting back in the form of an indivisible and invisible field of stress a portion of the more or less visible kinetic energies which stream upon it.

We may now return to Professor Bode's question as to the points of identity and difference subsisting between the physical sources of nerve stimuli and the perceived objects which they produce. Let us consider first the question of identity of substance, second, identity of quality, and third, identity of position in space and time. On the basis of what has been said, it will be at once evident that the perceived object is identical in substance (because composed of the same energy) with a part or aspect of the physical object, *viz.*, such part as has directly in the form of a present sensory stimulus or indirectly in traces of past sensation flowed into the organism. The identity is here much the same as that between the reflected and the incident light ray.

Secondly, as to quality, the question is more complex. It is certainly true that the difference between the physiological and the purely physical mediums is so great as to make it probable that the quality of a given stream of energy is radically changed in passing from the latter to the former medium. It is probable, for example, that the specific quality correlated with the ether wave-length that produces perceptual red, when the optic nerve current which it arouses is transformed into potential energy in the visual center, is itself something as different from red as the odor of musk. On the other hand, it must be borne in mind that according to our first postulate the real stuff of which an object is made is nothing but the energies which are flowing into that object from all other objects. A particular object, in other words, is nothing more or less than the whole universe as it happens to focus itself or project itself on some particular point. Consequently our own perceptual activity when directed to an object contributes to the nature of that object just as truly, though, of course, not so largely, as the sun's shining upon it. The attributes which we ascribe to it do forthwith belong to it. Does it then follow, as Professor Bode says, that the nature of an object is indeterminate, that it can be all things to all men, that its appearance is its reality and that error and illusion are meaningless? No. We can and do discriminate between the total mass of attributes ascribed to it and those few which are compossible or compatible with one another and with the total system of our perceptions. These *compossible* appearances are segregated from the general mass of appearance and contrasted with them as 'reality.' A mere appearance is simply a reality that has failed to harmonize with other realities, while conversely a reality is nothing but an appearance that has stood the test of our comparisons with other appearances. A thing as it is 'in itself' is a thing as it is for the whole universe of things collectively. It is the resultant of its appearances from all possible view-points. I, in perception, am one of these view-points and a member of the universe, hence what the thing appears to me to be, in the full light of all my other knowledge, that it really is throughout the length and breadth of the world as known to me.

Thirdly, as to the identity of position in space and time of the real and the perceived object. Just in so far as the locus of an immediately perceived object is actually found to be different from its locus as ascertained by comparison of all attainable perceptions, why, just in so far it is different. In all purely direct perception there is a definite and measurable aberration or displacement of the time locus or date of events due to the time taken by the stimulus in traveling to the brain. The events which we see at present are the events of a little time ago. As all things are in motion there is also a space aberration, which, however, is so slight and so uniform as not seriously to trouble us. The two encouraging points about our perceptual knowledge are (1) that it is good and *real* so far as it goes, and must be presumed to be true until proved to be false; (2) that the very distortions and errors of perception are mutually corrective when compared together in that wider social type of perception which constitutes reflective knowledge.

I would add in conclusion that if the account which I have given of the psychophysical process seems fanciful and crudely materialistic, it yet has a claim to consideration on the ground that there are no other theories in the field that do not lead either to the paradoxes of subjective idealism or to the still greater paradoxes of psychophysical dualism and parallelism.

W. P. MONTAGUE.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Psychology of Religious Belief. JAMES BISSETT PRATT. New York: The Macmillan Co. 1907. Pp. xii + 327.

This volume is a happy addition to the rapidly growing literature of religious psychology. It deals with a side of the subject that as yet has